



GIOVANNI ARMENISE- HARVARD FOUNDATION DEAN'S BASIC SCIENCE GRANT

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Since it was established in 1996, the Giovanni Armenise-Harvard Foundation has provided the dean of Harvard Medical School with unrestricted funding through the Armenise-Harvard Dean's Basic Science Grant. This critical support has allowed the dean to fund the School's most strategic priorities. Thanks to Count Giovanni Auletta Armenise's vision and generosity in supporting HMS, and to the dedication of his son, Count Giampiero Auletta Armenise, in continuing his father's good work, the School is educating future leaders in biomedical research while advancing science for the benefit of people all over the world.

During the 2016-2017 fiscal year, \$1,685,000 was made available to Dean George Q. Daley through the Armenise-Harvard Dean's Basic Science Grant. At the dean's direction, these funds were used to support Pathways, a bold revision of the MD curriculum at Harvard Medical School.

Pathways

The Pathways curriculum, launched in 2015, is a complete structural and pedagogical redesign of the previous MD curriculum.

Overview

In the Pathways curriculum, first-year students are taught the core basic/population science needed to succeed in their clinical clerkships. These clerkships, which make up the 12-month Principal Clinical Experience, now start in October of students' second HMS year, seven months earlier than in the previous curriculum. Having completed a year of clinical immersion, students spend their third and fourth years engaging in advanced coursework—integrated science courses, clinical electives, and scholarly research projects—with a new and deeper understanding of its importance. By developing their clinical interests earlier, students can follow post-clerkship paths that are tailored to their needs and trajectory.

"Our feeling is that much of the basic science is actually best learned after you've had some clinical experience," says Richard Schwartzstein, director of the Academy at HMS and the Ellen and Melvin Gordon Professor of Medical Education. Schwartzstein chaired the task force on the curriculum redesign.

The core preclinical classes in the new curriculum flip the traditional model of education upside down: instead of professors lecturing to classes, the new approach provides resources, such as brief concept videos, that help students absorb basic information before coming to class. During class time, students apply that information as they work in small groups to solve problems, with faculty leading discussions that explore the deeper principles behind the core content.



The new learning suites in the Tosteson Medical Education Center were constructed with a flexible design to support and complement new teaching approaches in the Pathways curriculum. Team-based, student-centered learning is integral to the curriculum.

The curriculum changes were implemented after a three-year, faculty-led process, driven by the School's desire to better engage students through more hands-on learning. The new curriculum also represents, in part, a response to the rapid changes in biomedical science and the practice of medicine. Ed Hundert, MD '84, HMS dean for medical education and the Daniel D. Federman, M.D. Professor in Residence of Global Health and Social Medicine and Medical Education, says, "When our faculty and students developed Pathways, we challenged ourselves to imagine the best possible curriculum to take advantage of recent advances in the science and technology of learning, and to prepare our students for the rapidly evolving world of biomedicine where they will spend their careers."

The launch of the new curriculum was accompanied by the opening of new classrooms. Extensive renovations to the Tosteson Medical Education Center created spaces that foster team-based learning under the new curriculum. Four new high-tech learning suites were constructed with a flexible design to support and complement new teaching methods.

"We need to incorporate ways of teaching that accept and allow for and highlight the use of new technology," says Bernard Chang, HMS associate professor of neurology and a member of the curriculum redesign task force.

Feedback

Student reaction to the new curriculum has been tremendously positive, based on questionnaire responses from Year 2 students between Oct. 1, 2016, and Jan. 13, 2017. The questionnaire was administered by the Association of American Medical Colleges. More than 60 percent of Year 2 students (101/165) responded to the survey. Compared to the Year 2 students who responded to the same questions in 2014, before the new curriculum was established, a greater percentage of Year 2 students in 2016 expressed satisfaction with the quality of their medical education (88% vs. 73%). A whopping 96 percent of the students in the 2016 survey said HMS has done a good job fostering and nurturing their development as future physicians, compared to 81 percent of the students in the 2014 survey. When asked to describe how often they attend in-person, pre-clerkship courses and lectures at HMS, 97 percent of the Year 2 students in the 2016 survey replied "often" or "most of the time," a huge jump from the 46 percent who responded that way in 2014. The 2016 survey also showed a significant increase, compared to 2014, in the percentage of students who felt that HMS was preparing them to communicate effectively with people across a broad spectrum of backgrounds.



HMS student Khin-Kyemon Aung, MD '19, told The Harvard Crimson: "I think in the long term, the new curriculum will make us—I'm hoping—into better physicians."

improvement into everything we do."

Support from the Armenise-Harvard Dean's Basic Science Grant affords Harvard Medical School the opportunity to build such improvement, and for that, Dean Daley and his cabinet are truly grateful.



Ed Hundert, HMS dean for medical education, says the "big picture" of the new curriculum is to introduce more quickly the basic sciences that students need to know to enter the clinics.

Future Path

A series of evaluation processes have been built into Pathways, which will allow educators to make sure that the new curriculum is effective, and which will also guide students in their efforts to navigate the curriculum.

"A good curriculum is never finished," Hundert says. "Given the extraordinary talent of our students, we owe it to them, to their patients, and to the world to build continuous



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